Richmond Refinery LPS Bulletin-Reliability Alky- K-1420 Trip (1/31/2012)

IMPACT ERM
Loss ID# 30674

Location:
Alky Plant
Cracking Division

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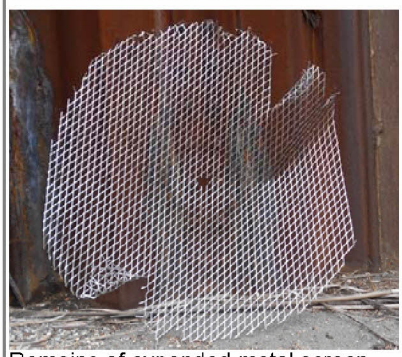
Screen material bound up between the fan shroud and fan blades.



Remains of expanded metal screen after failure.

Tenets of Operations Violated:

1) #10 – Always involve the right people in decisions that affect procedures and equipment

Incident Description:

On January 31, 2012, the Alky unit was shutdown for less than a day after the refrigerant compressor, K-1420, tripped offline due to loss of cooling system pressure to the Variable Speed Drive (VSD). Operators quickly found that the thyristor cooling system fan shroud protection screen had fell into the rotating fan blades below where the screen material had punctured several of the finned cooling tubes below the fan blades. The punctured tubes were the cause of the loss of cooling system pressure. Appropriate personnel were contacted to make the needed repairs to the cooling system and fan shroud, and than the Alky unit was restarted without incident.

An investigation was initiated to determine why this screen had fell into the fan blades.

Investigation Findings:

1) A new screen had been fabricated and installed for the fan shroud in November 2011 during routine motor replacement for the fan.
2) The new screen was of a different design than the original screen.
    1) The materials of construction had been changed.
    2) The installed elevation was lower than original design thereby reducing the space between the screen and the motor.
    3) The installation method was changed to a welded connection below the shroud rim rather than a bolted connection to the top of shroud rim as was previously used.
3) No MOC was initiated to properly address the design changes to the fan shroud protection screen. Engineering had not been involved in the change of this screen.

Lessons Learned:

1) Always follow the MOC process when installing components other than in kind replacements.
2) Always involve the right people when making changes to equipment.

Recommendations:

1) Reinforce with maintenance planners, shops and zone mechanics the need to involve engineering and operations in design changes and the need to utilize the MOC process in these decisions.
2) Purchase and install the original screen design from fan manufacturer on K-1420 thyristor cooling system fan.